WATER USE IN THE APALACHICOLA-CHATTAHOOCHEE-FLINT RIVER BASIN, 1990

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INTRODUCTION

Freshwater withdrawn during 1990 in the Apalachicola-Chattahoochee-Flint River basin totaled 2,098 million gallons per day. This is an increase of 42% between 1970 and 1990; however, between 1985 and 1990, freshwater withdrawals decreased nearly 3%. Of the total freshwater withdrawn in 1990, 86% was surface water, and 14% ground water. Nearly 60% of the surface-water withdrawn in 1990 was used for thermoelectric power generation, while 58% of the ground-water was used for agricultural irrigation.

DESCRIPTION OF STUDY AREA

The Apalachicola-Chattahoochee-Flint River basin covers approximately 19,600 square miles (U.S. Army Corps of Engineers, 1984) and drains a part of Alabama, Florida, and Georgia. The basin stretches from its headwaters, north of Lake Sidney Lanier in north Georgia, to Apalachicola Bay in Florida, where the Apalachicoala River discharges into the Gulf of Mexico. Located partly within the Apalachicola-Chattahoochee-Flint River basin is the Atlanta Metropolitan area.

Most of the drainage area and population in the Apalachicola-Chattahoochee-Flint River basin lies within Georgia. Georgia accounts for 74% of the land area in the basin, followed by Alabama with 14% and Florida with 12%. Total estimated population of the basin in 1990 was 2.64 million (U.S. Bureau of Census, 1991). Georgia accounted for 90% of the population in the basins, Alabama accounted for 7%, and Florida accounted for 3%. Nearly 87% of the population in the basin relied on public supply water systems for their drinking water needs, while the remainder were served by small suppliers not inventoried or are self-supplied by individual systems.

The rivers are a source of water supply for several cities, and are used for commercial navigation, recreational boating and fishing, and power generation. Seasonal flooding of these rivers sustains the flood-plain ecosystems along their channels and provides the freshwater needed to maintain a healthy seafood industry in Apalachicola Bay. Within the basin during 1990, 14 hydroelectric facilities generated nearly 2,384 gigawatthours of electricity and 8 thermoelectric facilities generated 33,460 gigawatthours of electricity.

DISCUSSION

Droughts can severly affect water users in this basin. The drought of 1980-81 caused a reduction in hydroelectric power generation, the curtailment of navigation, reduced lake levels for recreation, and restrictions on lawn watering and other water uses (U.S. Army Corps of Engineers, 1984). Because of the diversity of water uses, the increases in population, agricultural production, and the effects of droughts in the Apalachicola-Chattahoochee-Flint River basin, information on the quantity of water used, the location of use, and the categories of uses, and the amount of wastewater returned to the system is needed to manage and protect the resource.

As part of the U.S. Geological Survey National Water-Use Information Program, water-use data are collected and compiled for each State every 5 years (Solley and others, 1993). Water-use values are reported in each State by category, county, hydrologic unit (basin), and aquifer. Data used for this report were compiled by each State as part of the 1990 National Water-Use Information Program. Data for Alabama was collected through a cooperative effort between the Geological Survey of Alabama and the U.S. Geological Survey; data for Florida was collected through a cooperative effort between the Florida Department of Environmental Regulation and the U.S. Geological Survey; and data for Georgia was collected through a cooperative effort between the Georgia Geologic Survey and the U.S. Geological Survey.

WATER USE

Total offstream freshwater-use, (water diverted or withdrawn) within the Apalachicola-Chattahoochee-Flint River basin in 1990 amounted to 2,098 million gallons per day, of which approximately 17% or 351 million gallons per day was consumed (water evaporated, transpired, incorporated in products or crops or consumed by humans or livestock). Of the total freshwater-withdrawn, 86% (1,795 million gallons per day) was surface water, and 14% (303 million gallons per day) was ground water. The Chattahootchee River supplied most of the the surface water used in the basin (64%) and the Floridan aquifer system supplied most of the ground water used (44%) during 1990.

Nearly 60% of the surface water withdrawn from rivers, lakes and streams in this basin in 1990 was used for thermoelectric power generation, 24% was used for public supply, 12% was for self-supplied commercial and industrial use, and 4% was for agricultural irrigation. Of the ground water withdrawn from this basin, 58% was used for agricultural irrigation, 21% was for public supply, 11% was for self-supplied domestic use, 9% was for self-supplied commercial and industrial use, and less than 1% was for thermoelectric power generation.

TABLE 1. Total Freshwater withdrawals in the Apalachicola-Chattahoochee-Flint River basin by State for 1990.

[All figures in million gallons per day and may not add to totals because of independent rounding]

State	Public Supply	Domestic Self-Supply	Com.-Ind. Self-Supply	Agricultural Irrigation	Thermoelectric Self-Supply	Totals
Alabama	21	1	46	16	99	183
Florida	5	5	35	33	108	188
Georgia	460	27	167	206	868	1,727
Totals	486	33	248	255	1,076	2,098

Total water-use within the Apalachicola-Chattahoochee-Flint River basin increased by 42% (623 million gallons per day) between 1970 and 1990. Ground-water withdrawals increased 243% and surface-water withdrawals increased 30% between 1970 and 1990. However, between 1985 and 1990, total water withdrawals decreased nearly 3% (61 million gallons per day). Withdrawals for public supply increased 247% between 1970 and 1990 and 33% between 1985 and 1990. Withdrawals for commercial-industrial purposes increased 53% between 1970 and 1990, but decreased 2% between 1985 and 1990. Agricultural irrigation withdrawals increased more than 1,100% between 1970 and 1990 but decreased 7% between 1985 and 1990. Withdrawals for thermoelectric power generation decreased 4% between 1970 and 1990, and 13% between 1985 and 1990. Withdrawals for self-supplied domestic purpose have remained nearly the same for 1970, 1985, and 1990.

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